Bariosincosite $Ba(VO)_2(PO_4)_2 \cdot 4H_2O$

Crystal Data: Tetragonal. *Point Group*: 4/*m* or 4/*m* 2/*m* 2/*m*. As irregular clusters of divergent crystals to 250 μm, tabular on {001}.

Physical Properties: *Cleavage*: Distinct on {001}. *Tenacity*: n.d. *Fracture*: Splintery. Hardness = 3 D(meas.) = n.d. D(calc.) = 3.40

Optical Properties: Transparent. *Color* Pale green with a slight bluish tinge. *Streak*: Very pale green. *Luster*: Vitreous.
Optical Class: Uniaxial (-). ω = 1.721(2) ε = 1.715(2) *Pleochroism*: Weak, *E* = colorless, *O* = pale green. *Absorption*: *O* > *E*.

Cell Data: *Space Group*: *P*4/*n* or *P*4/*nmm*. *a* = 9.031(6) *c* = 12.755(8) Z = 4

X-ray Powder Pattern: Spring Creek mine, southern Flinders Ranges, South Australia.
3.100 (100), 2.017 (100), 2.786 (80), 5.748 (70), 2.847 (40), 4.552 (30), 2.368 (30)

Chemistry:

	(1)	(2)
BaO	23.20	28.76
SrO	4.19	
CaO	0.36	
VO_2	31.55	31.11
Fe_2O_3	0.20	
Al_2O_3	0.50	
P_2O_5	28.15	26.62
H_2O	[13.93]	13.51
Total	102.08	100.00

(1) Spring Creek mine, South Australia; average electron microprobe analysis, H_2O calculated; corresponds to $(Ba_{0.77}Sr_{0.20}Ca_{0.03})_{\Sigma=1.00}[(V^{4+}_{0.96}Al_{0.03}Fe^{3+}_{0.01})_{\Sigma=1.00}O_2(PO_4)]_2 \cdot 4H_2O$.
(2) $Ba(VO)_2(PO_4)_2 \cdot 4H_2O$.

Occurrence: Of low-temperature late-stage hydrothermal or supergene origin in a small vein.

Association: Quartz, copper, cuprite, goethite, whitlockite, mitridatite, fluorapatite, baryte, springcreekite.

Distribution: From the Spring Creek mine, near Wilmington, southern Flinders Ranges, South Australia.

Name: The prefix, *barrio*, indicates the barium analog of *sincosite*.

Type Material: South Australian Museum, Adelaide.

References: (1) Pring, A., U. Kolitsch, W.D. Birch, B.D. Beyer, P. Elliott, P. Ayyappan, and A. Ramanan (1999) Bariosincosite, a new hydrated barium vanadium phosphate, from the Spring Creek Mine, South Australia. Mineral. Mag., 63, 735-741. (2) (2000) Amer. Mineral., 85(5-6), 873 (abs. ref. 1).